

Mass Radiography In the United States In 1952

BETWEEN 1946 and 1950, the annual volume of group chest X-ray examinations increased from 6 million to 14.8 million (1). Since 1950, however, a decrease in this activity has been noted. Reports received by the Division of Chronic Disease and Tuberculosis of the Public Health Service indicate that during 1951, only 12.5 million chest X-rays were taken in the continental United States. This increased to 13.4 million in 1952—which is still well below the peak observed in 1950.

The accompanying table shows the number of X-rays taken in each State and Territory during 1952 and the cumulative number taken since reporting to the Public Health Service was first initiated for the period beginning July 1, 1947. These are the figures which have been reported to the Public Health Service by the States and Territories on the semiannual tuberculosis reports (PHS-1394) and the annual tuberculosis report (PHS-1393, Rev. 1-52) forms. For this report, X-ray case-finding activities are defined as “any group X-ray examinations, regardless of size of film, conducted primarily for screening purposes (for detecting pulmonary pathology).”

Information was requested from each State regarding the number of individuals examined during the year within the State and the number of cases of tuberculosis newly reported during the year as the result of X-ray case-finding activities. As well as could be determined, X-ray case-finding activities reported by the States exclude X-rays taken by the Armed Forces and the Veterans Administration so that the data reported primarily represent services to residents of the State or area reporting.

This report was prepared by the program analysis section of the Division of Chronic Disease and Tuberculosis, Public Health Service.

Column 3 of the table shows the percentage of the population X-rayed in each State and Territory in 1952, while column 4 shows the average annual percentage X-rayed during the entire 5½-year period. For all the States and Territories, 8.7 percent of the population was examined in 1952—about the same as the average annual percentage examined during the 5½-year period. Five-and-one-half-year averages ranged from a high of 27.9 percent for the District of Columbia and 23.0 percent for the State of Washington to 3.4 and 3.6 percent for New Jersey and Pennsylvania, respectively.

The data shown for the percentage of population X-rayed annually may be somewhat overstated because some persons receive more than one X-ray during a single year. However, since it is generally recommended that chest X-ray examinations be made annually, it is unlikely that the number of repeat X-rays is very great in any one year. Moreover, the extent to which the percentages are overstated is probably about the same from one State to another, so that State by State comparisons would seem to be valid.

The effectiveness of X-ray programs depends to a large extent on the followup and diagnosis of suspects identified during the course of these activities. For the year 1952, 42 States and Territories were able to furnish information regarding the amount of tuberculosis diagnosed as the result of group chest X-ray activities. An average of 1 new reportable case for every 500 X-rays taken was reported. This varied greatly from area to area—from about 1 case per 10,000 X-rays in Utah and Wyoming to more than 1 per 100 in 3 areas.

To some extent, these wide differences may be accounted for on the basis of actual differences in prevalence from one area to another. However, there are other important factors which influence these reported yield figures, including variations from one area to another in the intensity and completeness of efforts to obtain final diagnoses on suspects found in chest X-ray programs, and the relative difficulty encountered by the various reporting areas in differentiating survey-discovered cases from other newly reported cases of tuberculosis.

Chest X-ray examinations and percent of population examined, United States and Territories, 1947-52

State or Territory	Total X-ray examinations, 1952 ¹	Cumulative total X-ray examinations, July 1947-Dec. 1952 ¹	Percent of population ² examined 1952	Average annual percent of population ³ examined
Alabama	142,246	964,864	4.7	5.7
Arizona	61,710	572,676	7.2	13.9
Arkansas	168,530	1,039,550	9.0	9.9
California	872,579	6,547,709	7.7	11.2
Colorado	139,235	941,999	9.7	12.9
Connecticut	170,768	927,720	8.1	8.4
Delaware	19,063	127,914	5.6	7.3
District of Columbia	344,068	1,229,303	41.2	27.9
Florida	382,004	2,279,810	12.3	15.0
Georgia	248,822	1,640,138	7.1	8.7
Idaho	72,370	176,864	11.9	5.5
Illinois	1,022,507	4,042,869	11.5	8.4
Indiana	281,508	1,716,354	6.9	7.9
Iowa	257,138	890,140	9.7	6.2
Kansas	155,002	821,284	7.7	7.8
Kentucky	254,252	1,195,723	8.7	7.4
Louisiana	375,563	1,444,353	13.3	9.8
Maine	97,381	351,172	11.0	7.0
Maryland	238,996	1,225,882	9.5	9.5
Massachusetts	213,938	2,302,265	4.5	8.9
Michigan	468,378	2,201,820	7.0	6.3
Minnesota	355,312	2,423,640	11.8	14.8
Mississippi	197,947	1,178,290	9.1	9.8
Missouri	220,047	1,127,583	5.4	5.2
Montana	69,076	395,041	11.7	12.2
Nebraska	113,058	608,871	8.2	8.4
Nevada	0	38,253	0	4.3
New Hampshire	39,502	167,385	7.3	5.7
New Jersey	176,848	891,149	3.5	3.4
New Mexico	25,638	311,553	3.5	8.3
New York	864,607	4,501,972	5.7	5.5
North Carolina	483,549	1,760,968	11.6	7.9
North Dakota	65,650	392,743	10.9	11.5
Ohio	815,847	4,353,257	10.0	10.0
Oklahoma	225,478	1,286,035	10.0	10.5
Oregon	374,622	1,471,169	23.5	17.6
Pennsylvania	814,997	2,063,353	7.6	3.6
Rhode Island	80,410	434,080	9.8	10.0
South Carolina	132,574	806,022	6.2	6.9
South Dakota	64,070	350,902	9.6	9.8
Tennessee	540,256	2,652,607	16.6	14.7
Texas	427,869	2,618,698	5.2	6.2
Utah	69,682	408,085	9.5	10.8
Vermont	7,130	87,726	1.9	4.2
Virginia	436,087	2,129,408	12.5	11.7
Washington	409,874	3,003,051	16.6	23.0
West Virginia	142,259	624,539	7.3	5.7
Wisconsin	293,658	1,506,871	8.3	8.0
Wyoming	34,124	137,777	11.1	8.6
Total United States	13,466,229	70,371,437	8.6	8.5
Alaska	16,249	101,355	8.9	14.3
Hawaii	127,021	622,992	24.3	22.7
Puerto Rico	252,685	1,212,064	11.3	10.0
Total United States and Territories	13,862,184	72,307,848	8.7	8.6

¹ X-rays taken in 1952 from annual tuberculosis reports (PHS-1393, CDT). X-rays taken from July 1947 to December 1951 from semiannual tuberculosis reports (PHS-1394, TB). ² Column 1 as percent of population estimated as of July 1, 1952, from Current Population Reports, Population Estimates, Series P-25, No. 70, U. S. Bureau of the Census. ³ Column 2 ÷ 5½ as percent of April 1, 1950, census count.

Group chest X-ray examinations contributed materially to the number of new cases of tuberculosis reported in the United States and Territories during 1952. In the 42 States and Territories which furnished such data, mass radiographic activities produced 25 percent of all newly reported tuberculosis for that year. Thus, it might be estimated that, of the 118,000 cases newly reported in the United States and Territories during 1952 (2), nearly 30,000 were

reported as the result of group chest X-ray examinations.

REFERENCES

- (1) Enterline, Philip: Group chest X-ray examinations and the tuberculosis death rate. *Pub. Health Rep.* 67: 762-766 (1952).
- (2) Final 1952 report on tuberculosis morbidity, United States and Territories. *Pub. Health Rep.* 68: 1116-1117 (1953).

technical publications

How Many General Hospital Beds Are Needed?

Public Health Service Publication No. 309. By Louis S. Reed and Helen Hollingsworth. 73 pages; tables. 25 cents.

Basic to all community planning for hospital services are standards of the number of hospital beds per unit of population required for the provision of adequate health care. The need of hospital services, in terms of beds required, is neither fixed nor static. Rather, it is constantly changing as a result of changes in the incidence and prevalence of illness, the accepted techniques of medical diagnosis and treatment, the practices of physicians and the public in the use of hospitals, the nature of hospitals and hospital care, composition of the population, and many other factors.

The purpose of this publication is to examine once again the available data on the number of general hospital beds needed in this country and to reappraise bed needs in relation to population. Following a chapter on past estimates of hospital beds needed for general care, the paper discusses existing beds and volume of service and estimates the volume of service needed and beds

required to meet the true need for hospital care. The conclusions are that for provision of adequate care, on the basis of current levels of service, 4.4 to 4.7 beds per 1,000 population would be required for persons needing diagnosis and active treatment and another 2.3 to 2.6 beds per 1,000 population in general hospitals, chronic disease hospitals, and nursing home type facilities for persons needing nursing and convalescent care but not active medical treatment.

Appendixes include tables showing the total general hospital beds in the United States by region and State, and general hospital beds per 1,000 population in various other countries.

Techniques of Tuberculin Testing and BCG Vaccination

Public Health Service Publication No. 182. 44 pages; illustrated. 55 cents. (Available only from the Superintendent of Documents.)

In July 1950, the first laboratory was licensed by the Public Health Service for the manufacture, export, import, and sale of BCG vaccine. Thus BCG is available to health officers and clinicians who wish to use it as a vaccination for those persons

who are especially exposed to tuberculous infection.

The purpose of this publication is to describe and explain certain tested techniques of BCG vaccination and the tuberculin testing that precedes and follows it, and to aid in the careful and efficient operation of testing and vaccination programs.

The introduction to the manual discusses the BCG program and the staff and equipment that are essential to the conduct of such a program. The sections on tuberculin testing and BCG vaccination include care of the solutions and vaccines and step by step procedures for the two operations. Illustrations, taken from the film, "Techniques of Tuberculin Testing and BCG Vaccination," accompany the outline of procedures. A list of equipment needed and selected references are included in the appendixes.

This section carries announcements of all new Public Health Service publications and of selected new publications on health topics prepared by other Federal government agencies.

Publications for which prices are quoted are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Orders should be accompanied by cash, check, or money order and should fully identify the publication (including its Public Health Service publication number). Single copies of most Public Health Service publications can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington 25, D. C.
